



Los Alamos partners with CNT Technologies to commercialize SuperThread™ carbon-nanotube fiber

By Hildi T. Kelsey

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Ultra-strong CNT fibers made of lightweight carbon nanotubes could prove to be some of the strongest materials on Earth. The fibers, developed by Los Alamos scientist Yuntian Zhu, are 100 times stronger than steel (pound for pound for the same weight), tougher than diamonds, and roughly one-ten-thousandth of a human hair in diameter.

Los Alamos has licensed this carbon nanotube technology to Seattle-based CNT Technologies Inc. Initial tests show that the ultrastrong carbon-nanotube fiber, branded SuperThread™ by the company, can have better properties than steel for many applications and could soon be the primary substance from which the best airplanes, automobile parts, and sports equipment are made.

"Our advancement of carbon nanotube technology can lead to a broad range of applications including airplanes, bulletproof vests, electronic devices, and artificial limbs," said Dean Peterson, Superconductivity Technology Center leader (MPA-STC).

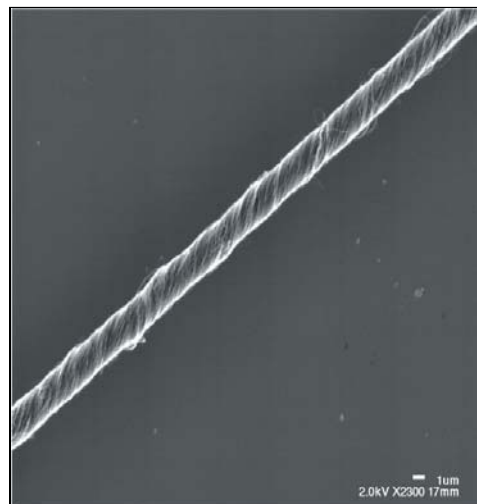
Carbon nanotubes, first discovered in 1991 by Japanese scientist Sumio Iijima, are cylindrical carbon molecules with structures similar to "buckyballs" (named for the late U.S. architect Buckminster "Bucky" Fuller who designed a geodesic dome with the same fundamental geometry). In 2004, Los Alamos produced a single-walled carbon nanotube (4 centimeters in length). Currently, Laboratory scientists, including Zhu, also of MPA-STC, are developing arrays of ultralong, super-strong, lightweight, double-walled carbon nanotubes. These arrays allow the nanotubes to be spun into fibers. Given the impressive results obtained for early prototype fibers, the Laboratory and CNT Tech entered into an exclusive license agreement.

Within six months, CNT Tech plans to be making 1 kilogram per day of SuperThread yarn. Over the next fifteen months, CNT Tech will scale up production of the nanotubes in its new laboratory at the Los Alamos Research Park. It will begin spinning the ultrastrong carbon-nanotube fiber on a custom-designed, computer-controlled spinning machine developed by the world's foremost experts in the fields of textile manufacturing, and machine construction. New machinery, designed using similar principle to those used in textile manufacturing, will be used to spin the carbon-nanotube fibers together to create SuperThread.

CNT Tech is seeking to develop products using the fibers. Within the next two years CNT Tech intends to replace carbon fibers with SuperThread, which will be designed for commercial use in aircraft materials, sport and recreation products, defense applications, and many other fields where a strong, high-strength material is required.

"Our mission is to produce the highest quality, lightest weight, strongest CNT fiber at the lowest possible cost for our corporate customers. If we accomplish that mission -- and we plan to -- our corporate customers will change the world in which we live. Aircraft, automobiles, satellites, engines, prosthetics, sporting goods, and tens of thousands of other products will be lighter, stronger, safer, and more efficient" said Robert O'Leary, President of CNT Technologies.

CNT Technologies recently hosted a workshop at the Los Alamos Research Park, attended by representatives from 19 major corporations, to introduce SuperThread to potential marketing partners. The dual purpose of the workshop was to introduce the SuperThread product, team, and commercial plans and, more important, invite



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a request for proposal from major companies seeking to form a business relationship and/or submit terms for an exclusive sublicense for SuperThread in their respective fields of use. The companies have until September 25, 2006, to submit their proposals to CNT Tech.

Los Alamos National Laboratory . Est. 1943

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